

REMARKS

Claims 1-70 are pending in the subject application. In the present Office Action, claims 1-70 stand rejected under 35 U.S.C. § 103(a) as being anticipated by U.S. Patent No. 6,815,390 to Vaughan et al. ("Vaughan"). Applicants respectfully traverse the rejection of claims 1-70 as set forth herein.

Independent claims 1, 22, 45, and 58 have been amended herein. Specifically, the claims have been amended to include the element "wherein the chemical reaction is conducted in the absence of a fluoruous solvent." Support for this amendment may be found in the specification as originally filed, for example at paragraphs [0009] and [0026] and in the examples. Dependent claim 35 has been amended to correct a minor typographical error. Support for this amendment may be found in the specification as originally filed, for example at paragraph [0024]. No new matter is added by these amendments.

Vaughan

To establish a case for *prima facie* obviousness, three basic criteria must be met: a) there must be some suggestion or motivation to modify the reference or to combine the reference teachings; b) there must be a reasonable expectation of success; and c) the prior art reference(s) must teach or suggest all the claim limitations. MPEP 2143. Applicants submit that *prima facie* obviousness has not been established for at least the reasons that the cited prior art reference does not teach or suggest all the claim limitations and there is no suggestion or motivation to modify the reference. Further, it is submitted by Applicants that the cited reference teaches away from the claims of the subject application.

The claims of the subject application set forth a method of conducting a chemical reaction in a non-fluoruous medium, "wherein the chemical reaction is conducted in the absence of a fluoruous solvent." A non-fluoruous medium does not contain a fluoruous solvent and the independent claims have been amended to clarify that the chemical reaction is conducted in the absence of a fluoruous solvent. As recited in the specification, "[t]he present invention provides a significant advance over prior art in that

a fluorous solvent is no longer needed to recover the fluorous catalyst, reagent, or transformed reagent.” (Paragraph [0009]). Indeed, unlike Vaughan and other prior art references, the present disclosure no longer requires a liquid-liquid fluorous biphasic system (i.e., a mixture of fluorous solvent and non-fluorous solvent) to conduct the reaction when using the processes of the subject application.

According to the Examiner, Vaughan teaches a catalyst system for fluorous biphasic catalysis process comprising functionalized plastic beads, monodisperse SiO₂ or SiO₂ flakes associated with the catalyst in the fluorous phase. Vaughan discloses a catalyst system for fluorous biphasic catalysis processes. (See, for example, Vaughan, lines 4-10 and claim 1). The Examiner states that Vaughan “fails to explicitly teach that the recited processes can be carried out in a non-fluorous medium.” However, in Vaughan, “the chemistry to be performed in a thin film of liquid adhering to the surface of the beads or SiO₂ particles” and “[a]s a result, a vastly reduced volume of the fluorinated solvent . . . is required.” (Vaughan, column 2, lines 57-63, emphasis added). Thus, Vaughan requires a fluorous solvent for the chemical reaction. Indeed, the Examiner acknowledges that Vaughan teaches “reactions can be carried out in the fluorous biphasic system, the simplest version being a two-phase mixture consisting of a perfluorocarbon (PFC) and a non-fluorinated solvent.” (Office Action, page 3).

Unlike Vaughan, the process of the subject application allows for conducting a chemical reaction “wherein the reaction is conducted in the absence of a fluorous solvent.” The process of the subject application “is advantageous because it eliminates the need for liquid-liquid biphasic systems” and “[t]here is no . . . fluorous solvent requirements.” (Paragraph [0026], emphasis added). Vaughan does not disclose, either explicitly or inherently, conducting the reaction in the absence of a fluorous solvent. Further, Vaughan teaches away from the claimed invention, since Vaughan requires the use of a fluorous solvent. One having ordinary skill in the art would see no suggestion or motivation in Vaughan to eliminate a required component of the Vaughan process. Therefore, *prima facie* obviousness has not been established.

Further, according to the MPEP, “the omission of an element and retention of its function is an indicia of unobviousness.” (MPEP 2144.04(II)(B), see also, *In re Edge*, 359 F.2d 896, 149 USPQ 556 (CCPA, 1966) (emphasis in original)). The claims of the

subject application omit the Vaughan elements of a fluorous solvent and the liquid-liquid biphasic system, while retaining the function (i.e., conducting a chemical reaction using a fluorous reagent). Therefore, Applicants submit that the claimed processes are non-obvious over the disclosure of Vaughan.

Finally, according to the MPEP, "proceeding contrary to accepted wisdom in the art is evidence of nonobviousness." (MPEP 2145(X)(D)(3), see also, *In re Hedges*, 783 F.2d 1038, 228 USPQ 685 (Fed. Cir. 1986)). As discussed in Vaughan, conventional wisdom for fluorous reactions requires a liquid-liquid biphasic system of a fluorous solvent and a non-fluorous solvent. (See, Vaughan, column 1, line 4 to column 2, line 63). Contrary to the accepted liquid-liquid biphasic systems of the prior art, the processes of the subject application are conducted entirely in a non-fluorous medium and in the absence of a fluorous solvent. Therefore, the processes of the subject application are non-obvious over Vaughan and the prior art showing liquid-liquid biphasic systems with fluorous solvents for fluorous-type reactions.


Applicants have discovered a method for conducting a chemical reaction in a non-fluorous medium using a fluorous compound in the presence of a solid adsorbant containing a fluorous domain, wherein the chemical reaction is conducted in the absence of a fluorous solvent. The Vaughan reference does not teach or suggest conducting a fluorous-type reaction in the absence of a fluorous solvent (i.e., in a non-fluorous medium) and instead discloses reactions in a liquid-liquid biphasic system which requires a fluorous solvent. Further, there is no suggestion or motivation to modify Vaughan to eliminate the fluorous solvent (which Vaughan emphasizes as a "required" component). Finally, evidence of non-obviousness exists, including omission of an element (i.e., the fluorous solvent) and proceeding contrary to accepted wisdom in the art. Applicants submit that the claims of the subject application are non-obvious over the Vaughan reference. Applicants respectfully request that the rejection under 35 U.S.C. § 103(a) be withdrawn.

CONCLUSION

Applicants submit that claims 1-70 of the subject application recite novel and non-obvious methods of conducting a chemical reaction in a non-fluorous medium using a fluorine compound in the presence of a solid adsorbent containing a fluorine domain, wherein the reaction is conducted in the absence of a fluorine solvent. In view of the Amendments and Remarks submitted herein, Applicants respectfully submit that all claims in the subject application are in condition for allowance. Accordingly, reconsideration of the rejection and allowance of all pending claims is earnestly solicited.

If the undersigned can be of assistance to the Examiner in addressing issues to advance the application to allowance, please contact the undersigned at the number set forth below.

Respectfully submitted,



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